

Quantified modifiers as modal operators[†] on connectives in modal logic

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Abstract: Quantified modifiers as modal operators[†] do not apply directly to connectives, but to sentences and variables in the general format of antecedent, connective, consequent. We present quantified expressions in that format by connective for *two* variables. The quantified expressions are equivalent to the quantifier as a modal modifier distributed on the variables.

We assume the method and apparatus of Meth8/VL4 with Tautology as the designated proof value, **F** as contradiction, N as truthity (non-contingency), and C as falsity (contingency). The 16-valued truth table is row-major and horizontal, or repeating fragments of 128-tables, sometimes with table counts, for more variables. (See ersatz-systems.com.)

LET ~ Not, ¬; + Or, ∨, ∪; - Not Or; & And, ∧, ∩; \ Not And;
 > Imply, greater than, →, ↗, >, ⊃, ⊃, ≻, < Not Imply, less than, ∈, <, ⊂, ⊄, ≠, <;
 = Equivalent, ≡, :=, ⇔, ↔, ≅ @ Not Equivalent, ≠;
 % possibility, for one or some, ∃, ∅, M; # necessity, for every or all, ∀, □, L;
 (z=z) T as tautology, ⊤, ordinal 3; (z@z) **F** as contradiction, ∅, Null, ⊥, zero;
 (%z<#z) C as contingency, Δ, ordinal 1; (%z>#z) N as non-contingency, ∇, ordinal 2;
 ~(y < x) (x ≤ y), (x ⊆ y); (A=B) (A~B).
 Note: For clarity we usually distribute quantifiers on each variable as designated.

Quantified modifiers as modal operators[†] do not apply directly to connectives, but to sentences and variables in the general format of antecedent, connective, consequent. We present modal expressions in that format by connective for *two* variables. The modified expressions are equivalent to the modifier distributed on the variables.

Connective_	p_q	#(p_q) = (#p_#q)	%(p_q) = (%p_%q)
+	F T T T	F N N N	C T T T
&	F F F T	F F F N	C C C T
>	T F T T	N F N N	T C T T
=	T F F T	N F F N	T C C T

[†] See at vixra.org/pdf/1901.0415v8.pdf for the proof of quantified modifiers as equivalent to modal operators, due to the now corrected, modern square of opposition.